Wildlife Habitat Appraisal Guide for Missouri

Background

The habitat appraisal guide is a field evaluation procedure designed to measure the quality of a habitat for a particular species of wildlife. It not only rates the quality of the existing vegetative cover, but also accounts for man's use and management of the habitat. The system will produce a habitat quality index for a specific field, woodland, or wetland as well as for an entire farm or operating unit of land.

The guide sheet breaks habitat into the most important characteristics which are rated on a 1-to-5 or 1-to-10 scale, depending on their importance. The resulting index ranges from a low of 0.1 to a high of 1.0. An adjective rating of Excellent, Good, Fair or Poor can then be applied to the numerical index.

The guide will identify weak or missing elements in the habitat as a basis for making improvements. For example, under Cropfield Management, fall tillage rates a point value of 1. By changing this tillage from fall to spring, a landowner could raise the value of his cropfield for that characteristic, from 1 to 10, a gain of 9 points.

Procedures

The following procedures describe the method for inventorying existing habitat conditions, rating each characteristic, and calculating the habitat type and farm habitat indexes.

Step 1: Habitat cover type determination

After completing the information called for at the heading of the guide sheet, divide the farm into the broad habitat types listed at the top of the appraisal form. The habitat types are defined as follows:

Cropland: Areas planted to small grains and row crops including fields with legumes or grass in the rotation as well as cropfields occasionally left idle in some years.

Pasture/Hayland: All pasture and hayfields including native prairie used for both forage and hay.

Old Field: Idle, overgrown agricultural land abandoned for at least two years but with less than 10 percent canopy coverage of overstory trees.

Woodland: Upland and bottomland forests or idle areas over grown with trees having canopy coverage greater than 10 percent.

Nonforested Wetland: This type includes marshes; potholes; sloughs; low, wet grassy areas; and shallow waterlogged depressions. Vegetation can consist of smartweeds, Reed canary grass, sedges, cattails and/or shrubs such as buttonbush or willow. These wetlands may have permanent water lasting all year or semi-permanent water lasting a portion of the growing season.

Bottomland Hardwoods: Wood swamps, forested bottomlands and tree lined oxbows characterize this type. Dominant trees may include silver maple, elm, sycamore, ash, pin oak, tupelo gum or cypress.

Step 2: Inventory procedure

Each sheet will accommodate several fields, woodlands or wetlands. Show the field number and the acres of that field or habitat type in the appropriate blanks at the top of the appraisal guide. Ratings for the majority of habitat characteristics will be made by visual estimate. Walk one or more transects across the field or through a woodland and note the existing characteristics called for in the guide sheet. Distance characteristics will be measured from the center of the field (habitat type) being appraised to the edge of the nearest different habitat type. This information can best be taken from an aerial photo, if available.

Step 3: Use of the guide sheet

Each vertical column of numbers represents one field, wetland or woodland of that habitat type. Move down this column, select the characteristic description that best fits the existing field or woodland condition and circle the appropriate numerical rating. Some judgement and interpretation will be required for conditions that do not exactly match the descriptions.

A habitat planning key is provided on the bottom of the form. The form is designed to: 1) appraise existing habitat conditions; 2) plan for habitat improvements; and 3) serve as a record of habitat improvements applied. The symbols used are as follows: 0 - indicates the existing conditions at the time of the appraisal. ⊕ - indicates the planned practices or management changes that the landowner has agreed to implement as part of the conservation plan. ● - indicates the planned practice or management change that was applied. Space at the end of the form is provided to record the existing habitat type index, a planned habitat type index resulting from practices or management changes agreed to by the landowner, and an applied habitat index resulting from the actual changes made by the landowner.

Step 4: Field, woodland or wetland index calculation

Staying within the same vertical column, add the scores for each habitat type (field) separately and enter the sum in the total block. Divide the total actual score by the maximum possible score and enter this figure in the block for existing habitat type index. The same procedure is used to calculate planned or applied indexes.

Always check the footnotes for special modifications that will change habitat type indexes. These modifications are designed to compensate for such factors as exceptionally large field and woodland size, lack of woodlands, or grazing pressure that reduce the capacity of the farm to support some species of wildlife.

Step 5: Farm habitat index calculation

All habitat types (fields, woodlands and/or wetlands), on the farm, must be rated to produce the farm habitat index. This index is a weighted average of all habitat type (field) indexes. Multiply each index by its acres for each of the fields appraised on the farm. Add each of these figures together and divide this sum by the total acres of all habitat types (fields) appraised. Enter the number in the appropriate blank. This procedure can be repeated to calculate a new farm habitat index based on planned practices the landowner has agreed to implement or has actually implemented.

Definitions of Habitat Characteristics For Upland Wildlife

1. Edge configuration and border extent

Edge is defined as the perimeter of the field, woodland or wetland being evaluated. The edge characteristic is divided into two components. First, the edge must be evaluated as straight or irregular and second, a determination must be made on the extent of a border. All evaluation sites will have either a straight or irregular edge but not all sites will have a border around the perimeter of the field being evaluated.

Irregular refers to the degree that the edge deviates from a straight line. Example: A cropfield with woody draws or a woodland with a pronounced irregular edge with a pasture. Score as irregular if the field is less than 20 acres in size with one side irregular or greater than 20 acres with two sides irregular. **Border** refers to woody (brush, windbreaks, hedgerows, etc.) or herbaceous (weeds, grasses, etc.) strips of vegetation between habitat types. The strips must be a minimum of 5 feet in width to be counted as a border. **Extent**—estimate the percent of the appraisal field surrounded by a woody or herbaceous border at least 5 feet wide. One side—25 percent; two sides—50 percent, etc.

Only edge configuration, either straight or irregular, is scored in the old field habitat type. Determining the extent of a border in a brushy field is difficult and cannot be consistently estimated.

2. Concealment cover

Estimate the percent of the field or woodland area that is covered by winter or escape cover. Some examples are dense brushy areas, rock piles, brush piles, rocky crevices, fallen logs, dense conifer areas, etc. Score the maximum point value (either 5 or 10 points) for fields less than 10 acres and with border around 75 percent or more of the edge. Concealment cover is not necessary in small fields (<10 acres) with a brushy, grassy or weedy border as cover for quail or rabbits. Add all types of concealment cover found within the field to obtain the total percent. Dense woody draws which are part of an irregular edge may also be scored as concealment cover when they extend more than 50 percent across the width of the field.

3. Vegetative cover

Estimate the percent canopy coverage of shrubs and herbaceous vegetation 6 inches to 4 feet tall for white-tailed deer and 6 inches to 18 inches tall for the other species. An area with more than 60 percent coverage will be difficult to walk through and is too thick for quail, rabbits and turkey to move through. Vegetative cover less than 20 percent coverage does not provide sufficient cover and food for these species.

4. Woodland size class and canopy coverage

Size class is defined as the diameter at breast height (DBH) category in which 50 percent or more of the trees occur. Size classes are (1) Sawtimber: Greater than 9" DBH; (2) Pole: 2" to 9" DBH; and (3) Reproduction: 0 to 2" DBH. Scattered sawtimber is defined as one or more trees per acre greater than 9" DBH. Canopy Coverage is defined as the degree to which foliage and branches of the forest overstory prevent sunlight from reaching the forest floor. An OPEN canopy is one having less than 50 percent coverage and a CLOSED canopy is one with greater than 50 percent coverage. The ungrazed open woodland has lots of sunlight and an abundant understory vegetation.

5. Woodland tree species

Estimate the percent of the forest overstory occurring in the black and white oak groups for deer and turkey. The other forest wildlife species, particularly squirrels, require a mix of overstory trees that produce a variety of nuts and fruits.

6. Forest openings

Estimate the percent of the woodland area occupied by openings or clearings having 0 to 10 percent canopy coverage. Score the maximum point value (either 5 or 10 points) for woodlands less than 40 acres in size because openings are not required in small wooded tracts to enhance food and cover. The same is true of linear or riparian woodlands which do not exceed 1/4 mile (1,320 feet) in width, regardless of acreage.

7. Distance to conifers

Conifers include planted pine plantations or thick red cedar stands two acres or greater in size. Ruffed grouse and many other species are attracted to conifers during harsh winter conditions.

8. Percent woodland in old growth trees

Estimate the percent overstory canopy coverage in the wooded tract composed of trees greater than 16" DBH. These larger trees provide nest cavities and increase food supplies for squirrels.

9. Nest or roost trees

Estimate the percent of the field border or edge occurring as woodland, treeline, shelterbelt or individual trees greater than 10 feet tall. This characteristic measures nest site availability for mourning doves.

10. Coniferous nest trees

Estimate the percent of the field border or edge occurring as pine or red cedar trees greater than 10 feet tall. Coniferous trees serve as the best nest sites for doves.

11. Number of tree cavities per acre

Note the number of trees, either live or dead, with cavities. Usually, live trees or snags with cavities large enough for squirrels are greater than 6" DBH. Diameter of cavity opening can be small as 2" across.

12. Average density of shrub and tree reproduction >3 feet tall

Estimate the density of woody understory plants. More than four stems per square yard throughout a stand is so thick that walking will be difficult. Generally, a thick understory is only found on north to east facing slopes or in recently harvested woodlands. Ruffed grouse prefer very dense understory vegetation for drumming and brood rearing habitat.

13. Aspect

Note the aspect (direction of slope) and circle the appropriate number. Use the category that corresponds to the predominant slope direction for woodlands with more than one aspect.

14. Woodland size

Estimate the percent of the woodland being appraised that is within the specified distance of any other habitat type (cropland, pasture/hayland, old field or nonforested wetland). Enter the percent figure in the block directly above the column of numbers for this characteristic. Exceptionally large woodlands are not attractive to bobwhite quail and rabbits.

15. Field Size

Estimate the percent of the field being appraised that is within the specified distance of dense winter cover or ungrazed woodland. Enter the percent figure in the block directly above the column of numbers for this characteristic. Exceptionally large fields are not attractive to bobwhite quail or rabbits.

16. Number of important food plants

A list of plant species important as a food source is printed on the back of each guide sheet. Record the occurrence of the plants found on this listing. Circle the point value given for that number of plants identified in the field. Some judgement is required in determing if a plant is available in sufficient abundance to provide an adequate food source.

17. Grazing or haying pressure (degree of use)

Estimate the annual grazing or haying intensity. Heavy use is defined as over-utilization of the forage. Moderate use is defined as acceptable use within SCS standards and specifications or 3"-6" over winter height of cool-season grasses and 8"-12" over winter height of warm-season grasses. Light use is under-utilization of forage. Example: three cuttings of cool-season grass hay is heavy use; two cuttings is moderate use; and one cutting is light use under normal moisture conditions.

18. Legume canopy coverage

Estimate the percent of ground covered or shaded by legumes both native and introduced. Legumes are an important food plant group and include alfalfa, clovers, tick trefoils, Korean lespedeza, etc.

19. Forb canopy coverage

Estimate the percent ground covered or shaded by broadleaved plants (not grasses) including legumes. These plants, especially annual weeds, provide seeds for food important to quail and prairie chickens.

20. Grassland composition

Rank the pasture/hayland habitat to the closest description on the guide sheet. Any mixture of both cool-season grass(es) and legume(s) would be rated in the category, "Mixed Cool-Season Grasses; or Predominately Legumes."

21. Average height of herbaceous vegetation

Estimate the average plant height for the May 1 to July 1 period in the pasture/hayland habitat for the pheasant. This characteristic is important for pheasant nesting and fields mowed once during this period will usually have an average plant height of less than 9 inches. For the prairie chicken, estimate the average plant height for the May 1 to August 1 period.

22. Grassland management

Estimate grazing and haying pressure, burning frequency, and flooding periods of grassland types for the periods of the growing season indicated on the form. This characteristic is a measure of ring-necked pheasant and prairie chicken nesting habitat quality.

23. Woody invasion

Estimate the percent of the field covered by the canopy of trees, shrubs and vines. Both ring-necked pheasant and prairie chickens prefer fields without woody invasion.

24. Percent bare ground (May 1-October 1)

Estimate the percent of the ground occurring as bare ground and not covered by vegetation or litter. Mourning doves are seed eaters preferring to forage for food on bare ground.

25. Cropping practices, cropfield management and crop rotation

Discuss normal or past cropping practices with the landowner and select the most appropriate description.

Score the maximum point values (either 5 or 10 points) for cropfields, idle for 1 or 2 years in government sponsored set-aside programs under the Cropping Practices and Crop Rotation characteristics. Fields idle for more than two consecutive years should be appraised as old fields and not as cropfields.

26. Percent cropland, pasture/hayland or woodland within 2-mile wide circle

Estimate the percent of cropland, pasture/hayland or woodland within a 2-mile wide circle of the center of the field being rated. The amount of the cropland and pasture/hayland surrounding the farm will determine the farm's attractiveness to ring-necked pheasants, prairie chickens and mourning doves. Similarly, the amount of woodland in the vicinity of farm is important to white-tailed deer, wild turkey, squirrel and ruffed grouse abundance. An aerial photo is usually necessary for accurate estimation. Discussing surrounding land use with the landowner will also facilitate scoring these characteristics.

27. Percent native grass within 2-mile wide circle

Estimate the percent of grassland within 2-mile wide circle that is predominately native warm-season grasses or is native prairie. This characteristic is difficult to estimate from an aerial photo. Discussing the composition of surrounding hayfields and pastures with the landowner or noting this characteristic while driving to the farm may help.

28. Percent woodland use in 2-mile wide circle

Estimate the percent woodland within 2-mile wide circle that is ungrazed. This characteristic is very important to deer, turkey and ruffed grouse because grazed woodlands can degrade habitat quality for these species.

29. Percent pasture/hayland use in 2-mile wide circle

Estimate the percent pasture/hayland within 2-mile wide circle that is lightly to moderately used (forage utilization within SCS standards and specifications). The ring-necked pheasant and especially the prairie chicken require properly utilized grassland for nesting and brood rearing.

30. Percent woodland within 660' of reproductive size class (>2 acres) stand

Estimate the percent of the woodland (stand) that is within 660 feet of a recently havested forest tract (reproductive size class). Ruffed grouse perfer to drum and raise broods in thick resprouting woody vegetation.

31. Cropland distribution within 2-mile wide circle

Estimate the percent of all cropland within 2-mile wide circle of the field being rated that is within 660 feet (1/8 mile) of pasture/hayland. The ring-necked pheasant prefers land use consisting primarily of cropland but grass nesting sites must be in close proximity to cropland. Usually this characteristic will score the highest point value (10 points) except in areas of expansive cropfields without adjacent grasslands. Grass contour strips or grass terraces within cropfields, at least 30 feet wide, can also be scored as pasture/hayland within 660 feet of cropland.

32. Percent Pasture/Hayland in grass areas >80 acres within 2-mile wide circle

Estimate the percent pasture/hayland within a 2-mile wide circle of the field being evaluated that occurs as fields 80 acres or larger. This characteristic applies only to the prairie chicken because land use patterns consisting of small fields reduce habitat quality for this bird.

33. Woodland distribution within 2-mile wide circle

Estimate the percent of all forest cover within a 2-mile wide circle of the tract being rated that is within 660 feet (1/8 mile) of cropland, pasture/hayland or old field. Deer and turkey numbers are related to the size and distribution of forest cover.

34. Distance measurements

Measure distances from the center of the field or woodland being appraised to the edge of the nearest habitat type indicated on the guide sheet. For any habitat type exceeding the maximum distances, the score is 1 regardless of measurement or plant species composition.

A 1/4 acre or larger food plot consisting of annual grains or green browse (legumes) will substitute for distance to cropfield. Plant diversity in Distance to Pasture/Hayland refers to the number of different grasses, forbs and legumes. A pasture/hayland with high plant diversity should have legumes and forbs in addition to grasses. Generally, a heavily grazed or mowed pasture/hayland will have low plant diversity. Grass strips greater than 30 feet wide in cropfields (waterways, field borders, filter strips) qualify as Distance to Pasture/Hayland.

Definitions of Habitat Characteristics For Wetland Wildlife

1. Fall and winter water conditions

Water is an essential part of fall and winter habitat (October 1 to March 1). Water can be provided by pumping, flooding or runoff. Water must be present during the entire October to March period to receive a score higher than 1.

2. Fall and winter flood conditions

Fall and winter flooding can damage food sources by covering annual seeds with silt or covering food plants with debris. This situation generally occurs in wetlands along streams and rivers. The flood damage to wetland vegetation varies from year to year and this characteris must be scored as an average condition by consider previous flooding and projecting future conditions. Scor the lower point values if fall and winter floods damage important food sources most years. Score the higher point value if uncontrolled floods and siltation are rarely a problem.

3. Water depth 1"–18" deep

Mallards and geese have difficulty feeding in water more than 18" deep. Estimate the percent of the wetland or flooded cropland area with water 1"–18" deep and account for periodic fluctuations from flooding or runoff that may make water depths greater than 18".

4. Important food plant coverage

A listing of food plants important to mallards and geese are listed on the guide sheets. Percent coverage is more important than number of different food plants. Migrating waterfowl require a significant amount of food to support large numbers of birds over the 5 to 6 month fall-winter period.

5. Number of important food plants

Consult the list of food plants on the guide sheets and circle the appropriate number. Some judgement is required in determining if a plant is available in sufficient abundance to provide an adequate food source.

6. Winter cover

Migrating waterfowl prefer nonforested wetlands domi- t nated by food producing plants, but a certain amount of protection from wind is desirable. Estimate the percent wetland covered by woody vegetation and/or persistent emergents (cattails, bulrush, smartweeds, or other herbaceous plants that remain erect for most of the winter).

7. Loafing sites

Loafing sites are areas without vegetation, or water less than 1 inch deep where waterfowl can rest.

8. Sloughs and channels

This characteristic applies to bottomland hardwoods and includes shallow depressions, sloughs, creek channels, oxbows, etc. that will have water during the fall-winter period. These areas may be dry during the summer months.

9. Percent wetlands within 2-mile wide circle

Estimate the percent of bottomland hardwoods and nonforested wetlands with a 2-mile wide circle of the field or wetland being rated. Mallards are attracted to large wetlands or groups of wetlands.

10. Percent nonforested wetlands and/or open water within a 2-mile wide circle

Estimate the total nonforested wetlands and/or open wat within 2-mile wide circle of the wetland or field be rated. Canada geese will not use bottomland hardwoo but they do prefer larger wetlands and open water areas.

11. Distance measurements

Measure distances from the center of the wetland or field to the edge of the nearest habitat type indicated on the guide sheet. The availability of water from October 1 to March 1 on a predictable and reliable basis in adjacent habitats must also be evaluated. Unpredictable or unreliable water availability will result in a low point value of 1 regardless of the distance between the sample site and the adjacent habitats.

12. Distance to major river, lake or reservoir >100 acres

Canada geese require access to open water during the winter. Major rivers are defined as watercourses greater than 100 feet wide and may include the following:

Missouri, Mississippi, Grand, Osage, Chariton, St. Francois and Black. All Corps of Engineers' impoundments will qualify as major reservoirs. Distances can be estimated from county or state road maps.

13. Distance to major Canada goose winter area

Canada geese are very traditional in selecting migration and wintering habitats and locations. These birds may not utilize suitable winter habitat if it is located too far from sites within historical use. Major wintering areas include only the following state wildlife management areas (WMA) and national wildlife refuges (NWR) and Corps of Engineers Reservoirs: Fountain Grove WMA (Linn County), Swan Lake NWR (Chariton County), Smithville Reservoir (Clay County), Thomas Hill WMA (Randolph County), Clarence Cannon Reservoir (Audrain County), Schell-Osage WMA (St. Clair County), Table Rock Reservoir (Stone County), Bull Shoals Reservoir (Taney County), Duck Creek WMA (Stoddard County), Mingo NWR (Stoddard County), Stockton Reservoir (Cedar County) and August Bush WMA (St. Charles County).

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Soil Conservation Service